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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/706,130 | 11/12/2003 | Bradley W. Smith | AA1-14260 | 6218 |

45483 7590 04/05/2006

AUTOLIV ASP, INC
Attn: Sally J. Brown ESQ
3350 Airport Rd
OGDEN, UT 84405

EXAMINER

SPISICH, GEORGE D

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

3616

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/706,130 | Applicant(s) SMITH, BRADLEY W. | |
| | Examiner George D. Spisich | Art Unit 3616 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 24, 2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perotto (USPN 5,970,880 provided in Applicant's IDS) in view of Dahl et al. (USPN 6,139,055 in further view of Nakashima et al. (USPN 6,598,901).

Perotto discloses an inflator device having a diffuser chamber (8), the diffuser chamber comprising a plurality of orifices (9) forming a diffuser exit area for flow of product gas from the inflator device, a first combustion chamber (10) connected to the diffusion chamber, the first combustion chamber having a first combustion chamber exit area comprising a first orifice (6) and providing independent fluidic communication between the first combustion chamber and the diffuser chamber, a supply of a first gas generating pyrotechnic material (21) contained within the first combustion chamber and wherein at least a portion of the supply of first pyrotechnic material is reactable.

Perotto discloses a second combustion chamber (7) connected to the diffuser chamber, the second combustion chamber having a second combustion chamber exit area comprising a second orifice (5) and providing independent fluidic communication between the second combustion chamber and the diffusion chamber, a supply of second gas-generating pyrotechnic material (20) contained within the second combustion chamber and wherein at least a portion of the supply of the second gas-generating pyrotechnic material is reactable.

During a single stage combustion of the supply of the first gas generating pyrotechnic material, the supply of the first pyrotechnic material is selectively reactable to produce a first combustion chamber single stage combustion product gas, the first orifice being "controlling orifice" for the flow of the first combustion chamber single stage combustion product gas from the inflator device.

Similarly, during a single stage combustion of the second pyrotechnic material in the second combustion chamber the function is the same as in the first chamber.

During a dual stage combustion, the first and second pyrotechnic materials and combustion chambers, the diffuser exit area "controls the flow" of the first combustion chamber dual stage combustion product gas and the flow of second combustion chamber dual stage combustion product gas from the inflator device whereby internal pressure within both the inflator device and the first combustion chamber increases and the burn rate of the supply of the first gas generating pyrotechnic material increases.

With respect to the burn rate equation and the burn rate increasing as pressure increases, this is a known characteristic. As pressure increases, a burn rate increases. It is inherent that during the dual stage combustion, the pressure in the inflator would increase and therefore increase the burn rates.

Perotto discloses a condenser element (29) which is a cooling medium contained within the diffuser chamber.

Perotto discloses first and second initiators in discharge communication with the first and second combustion chambers and in operational initiating contact with the supply of first and second gas generating pyrotechnic material. These initiators are operable independently in single stage combustion and together in dual stage combustion.

However, Perotto does not disclose the particular characteristics of the pyrotechnic materials and inflator.

Dahl et al. teaches (col 12, lines 40-45) a time delay of 30 msec, and also that when both igniter assemblies are used in succession, then pressure increases more rapidly than when the one chamber is used alone. Given this, and the standard burn

rate expression, it is determined that the burn rates of a material are effected by the actuation of plural chambers.

Nakashima et al. teaches (col. 5, lines 37-45), which well known in the art of inflators, that it is known to adjust the actuation performance of a gas generator. The adjustment of the two combustion chambers can be made by using gas generating agents that are different in burn rate, composition, composition ratio, amount of each other and furthermore, a dual chamber inflator having a first stage where one chamber fires alone if desired, and dual stages where the chambers fire in unison, or in succession either one before the other.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use materials having the characteristics as claimed in the dual stage inflator as disclosed by Perotto, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Furthermore, Nakashima et al. has disclosed that it is known in the art to vary the materials as previously discussed to optimize the operating characteristics of the inflator.

Response to Arguments

With respect to Applicant's argument that Perotto does not show or suggest the diffuser exit area control the flow during dual stage combustion and the internal

combustion pressure within both the inflator device and the first combustion chamber increases the burn rate of the first gas generating pyrotechnic material, Examiner disagrees and maintains the rejection. Examiner points out that the terms "controlling the flow" and "controlling orifice" are extremely broad terms. Furthermore, Examiner restates that there is inherently high pressures inside an inflator. From a single stage to a dual stage the pressures would increase. This is related to the increased velocity of the inflation fluid from a single stage and a dual stage. A known characteristic is that as pressure increases, a burn rate increase. Examiner interprets Applicant's arguments as Applicant believing that Perotto's inflator would not have an increased pressure and burn rate during a dual stage combustion with respect to single stage combustion. Examiner maintains that the structure of Perotto when combined with the teachings of Nakashima et al. would produce the structural and operational inflator Applicant has claimed.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George D. Spisich whose telephone number is (571) 272-6676. The examiner can normally be reached on Monday-Friday 9:00 to 6:30 except alt. Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George D. Spisich
April 2, 2006



PAUL N. DICKSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600